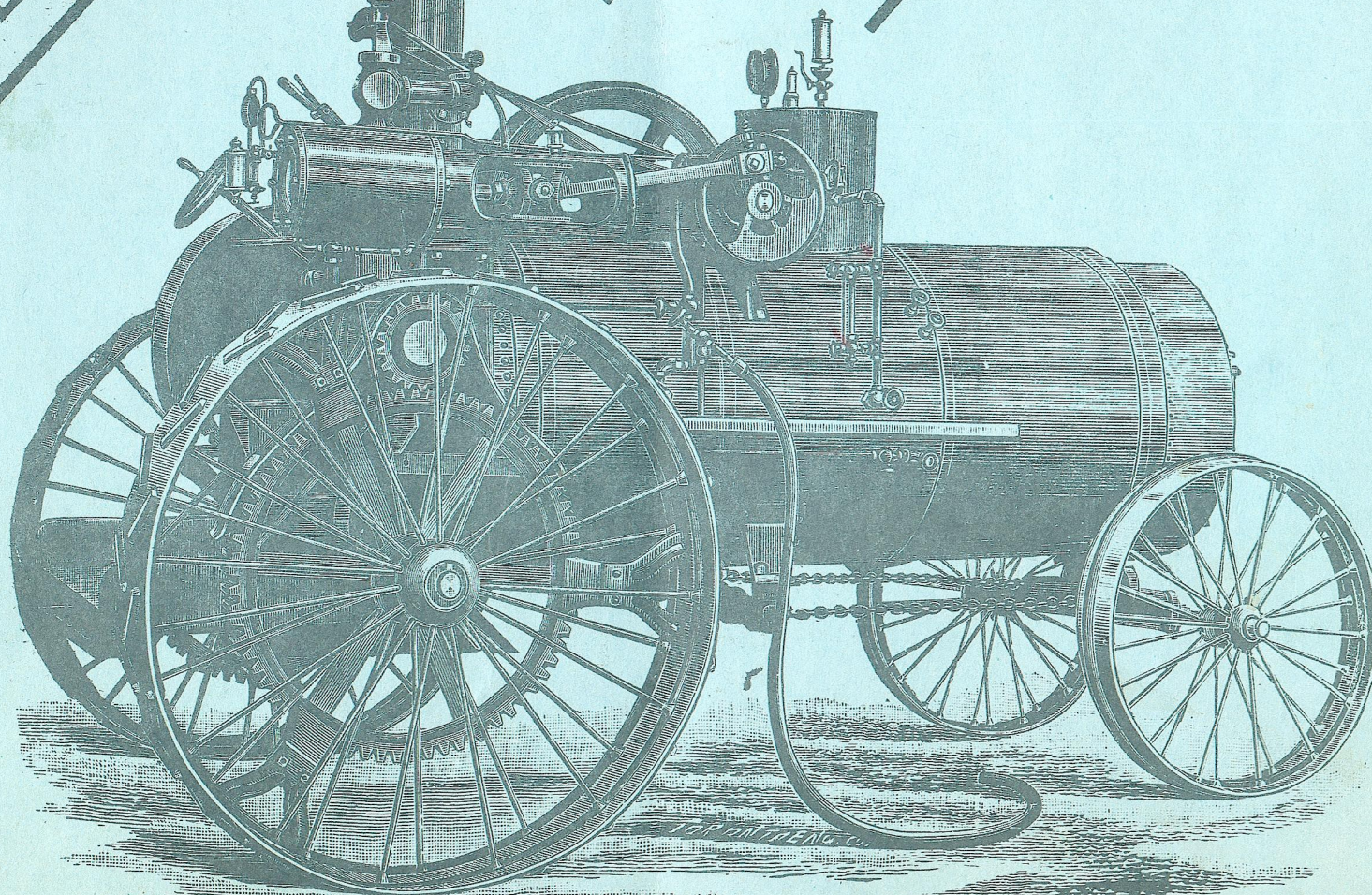


PETERSON
ENGINE
WORKS,
SARNIA
ONT.



PETERSON'S TRACTION STRAW-BURNING ENGINE. (Right Side)

—1891—

ESTABLISHED IN 1857.

NORRIS C. PETERSON & SONS,

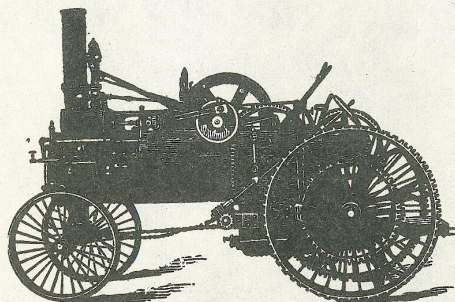
ENGINE AND BOILER WORKS

—MANUFACTURERS OF—

Portable Engines, Stationary Engines,

TRACTION ENGINES, STATIONARY BOILERS.

KING · OF · THE · TRACTION.



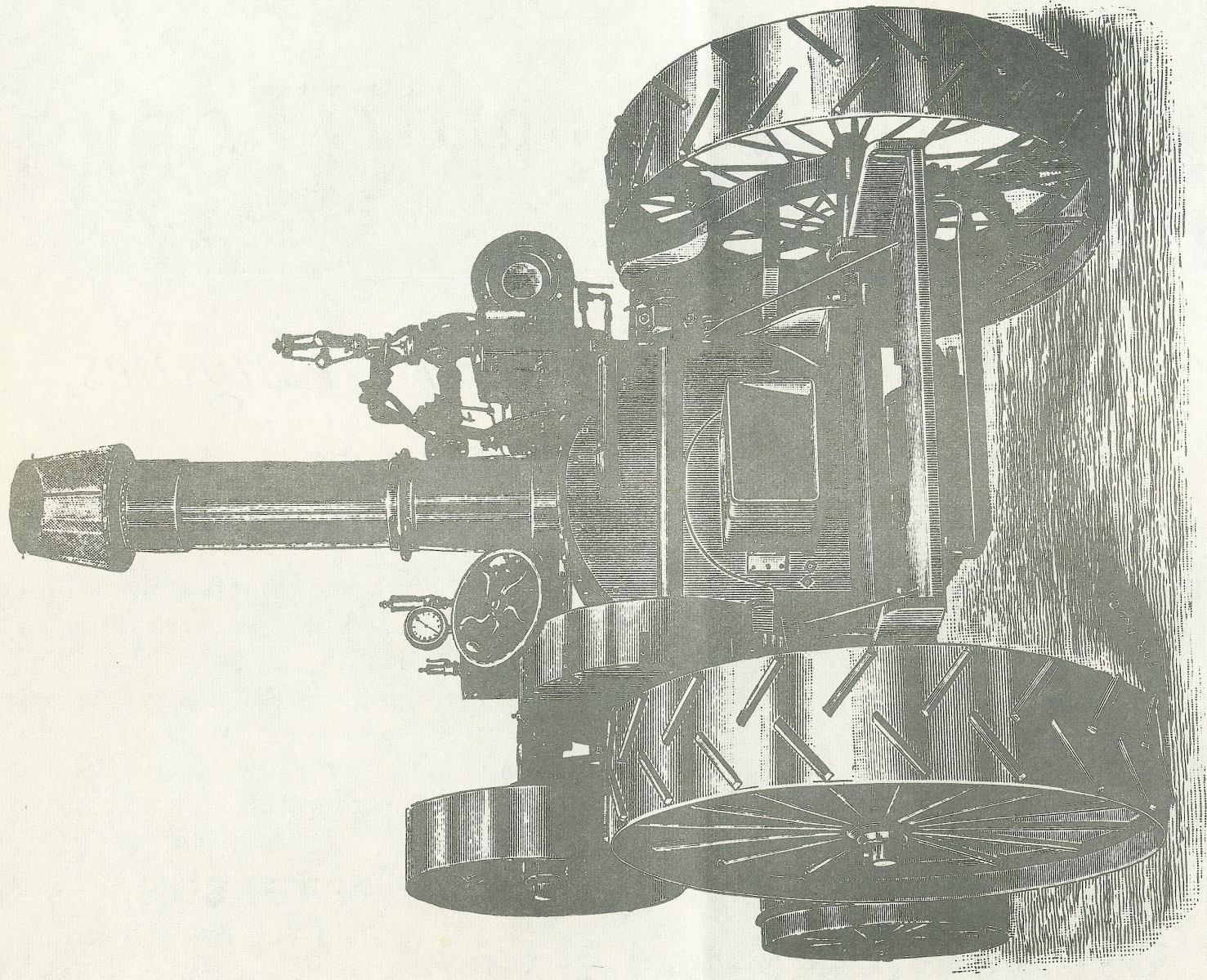
THE MOST POWERFUL AND COMPLETE
TRACTION ENGINE.

WE INVITE correspondence, and shall be pleased to hear from those desirous of purchasing Threshing Engines, and will gladly answer any enquiries, feeling, as we do, that we can safely recommend our machines to the fullest confidence of the farming community.

ADDRESS:

N. C. PETERSON,

Sarnia, Ontario.



REAR VIEW.

PETERSON'S STRAW-BURNING TRACTION ENGINE.

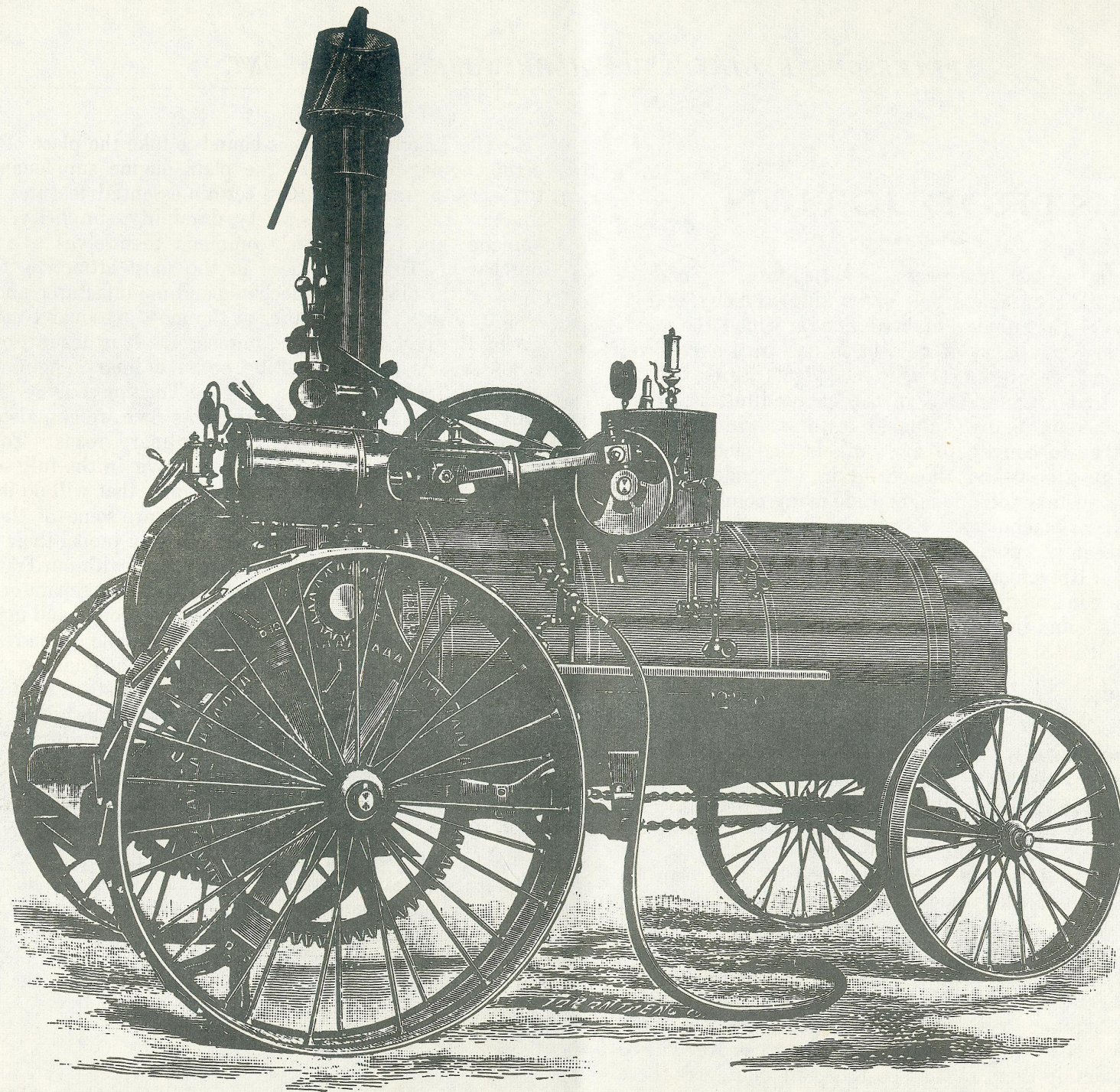
INTRODUCTION.

Within the past few years the agricultural engine has become an indispensable article of working economy, and it is also one of the subjects of invention on which the most extraordinary versatility of new ideas has been expended. We feel that we are entitled, in no slight degree, to the credit of having incorporated, in the engine illustrated and described herein, many valuable features, which are so prominent as to convey to most minds the fact that we have been earnest and thoughtful in our endeavors to correct the mistakes of others, and add many points of merit to this class of machinery. Every opportunity for improvement has been accepted, and no device that could add to the efficiency or convenience of our engines has been neglected, for in its construction we have overcome the difficulties and defects found in others, and adopted those qualities we found excellent in any of them. The designer has devoted a great amount of time and labor in perfecting these things, considered by the great majority of builders as minor points, but which, in reality, are of great importance in the successful and satisfactory operation of the machine. We place it before the public solely upon its merits, knowing that it will come up to the description given in the following pages in every particular, and supply a want long felt among the operators of portable and traction engines,—that of an engine which, from its substantial construction, can be placed in the hands of persons who are inexperienced in the management of steam engines, without any fear of serious damage resulting from their lack of experience. Its simplicity of construction and easy management can be seen at once, and will most certainly be admired and commended by all. Therefore, believing that our machines stand pre-eminently above all others in merit, and that we will be able to maintain them in that position, we would ask those who are interested in first-class threshing engines to carefully read this book through.

The Traction Engine is bound to take the place of the plain engine, similarly as the plain engine supplemented the horse-power. There are certain essential features in a Traction Engine, such as safety, durability, simplicity, convenience and power, which commend themselves to every purchaser. To secure these in the most attractive form must be the aim of the mechanic and manufacturer, and he who furnishes these features at the most reasonable cost is giving the best value to the purchaser. It is absurd to put a few wheels or chain belting on an ordinary engine and call it a Traction Engine. A good Traction Engine is not only self-propelling, but will draw its own weight, also the separator and supply tank, over ordinary roads. To accomplish this requires a road locomotive in the full sense of the word, and while there are engines that will do it, the majority of them will not; and there are some of the so-called traction engines which will scarcely propel their own weight. We claim to be in the front rank with our Traction Engine. The engine has power to pull the separator and water-tank up hill and across creeks, over rough and muddy roads, through plowed fields, and over stubble ground; and the machine is under perfect control of the engineer, who, by a single movement of the lever, can start it, stop it, reverse it, hold it going down hill, back it up hill, or turn or control its movements as easily as a driver can control a span of horses attached to a wagon.

Having placed in operation the past seven years a large number of both our Locomotive Furnace Direct Flue Boiler (coal or wood-burner) Traction Engines, also our special Tubular Furnace Return Flue Boiler, STRAW-BURNER TRACTION ENGINE, as well as our Plain Portable Engines, all of which have been thoroughly tested, we take pleasure in recommending them to the public as being the most substantial, practical and economical threshing engines that have been placed in the Dominion.

The cuts on pages 2, 4 and 6 illustrate our Traction Straw-Burner Engines.



PETERSON'S TRACTION STRAW-BURNING ENGINE. (Right Side)

OUR TRACTION ENGINES are the very latest development in their particular class of machines. The designer has aimed to combine as many theoretical elements with the practical as are consistent with the construction of a first-class, practical traction engine, keeping in view at the same time the danger of encumbering the engine with *complicated* and "*trappy*" contrivances. A traction engine in its plainest form is not the simplest machine, to say the least, hence we argue that the engine that will give the best average performance, with the smallest number of parts, must be the best engine. The designer having kept this constantly in view, has succeeded in bringing out the simplest, the most compact, and efficient traction engine on the market.

THE ENGINE has a frame or bed of improved and handsome design, with the metal so distributed as to give the greatest rigidity with the least amount of metal. The engine is what is termed the overhanging cylinder. The cylinder is a separate casting, bolted to the end of the frame which forms the cylinder-head. This allows the cylinder to expand without causing any extra strain.

THE CRANK DISC is made large in diameter that there may be sufficient weight introduced to balance the engine. We have succeeded in making a superior balanced engine.

THE CROSS-HEAD is of an entirely new pattern, and is conspicuous for its utility and graceful design. The Cross-head Pin is located centrally, thereby taking the working strain evenly; the pin can be taken out and replaced. The Cross-head Gibbs are so constructed as to be adjusted for wear.

THE PISTON is composed of the steel rod-head and two self-adjusting rings, there being no steel springs or nuts to rattle loose, or corrode away, or be tampered with. The crank and counter-shafts are of large diameter, and run in babbitted boxes of unusual length.

THE STUFFING BOXES are made of brass, with a screw adjustment, thereby tightening the packing evenly without cramping the rod.

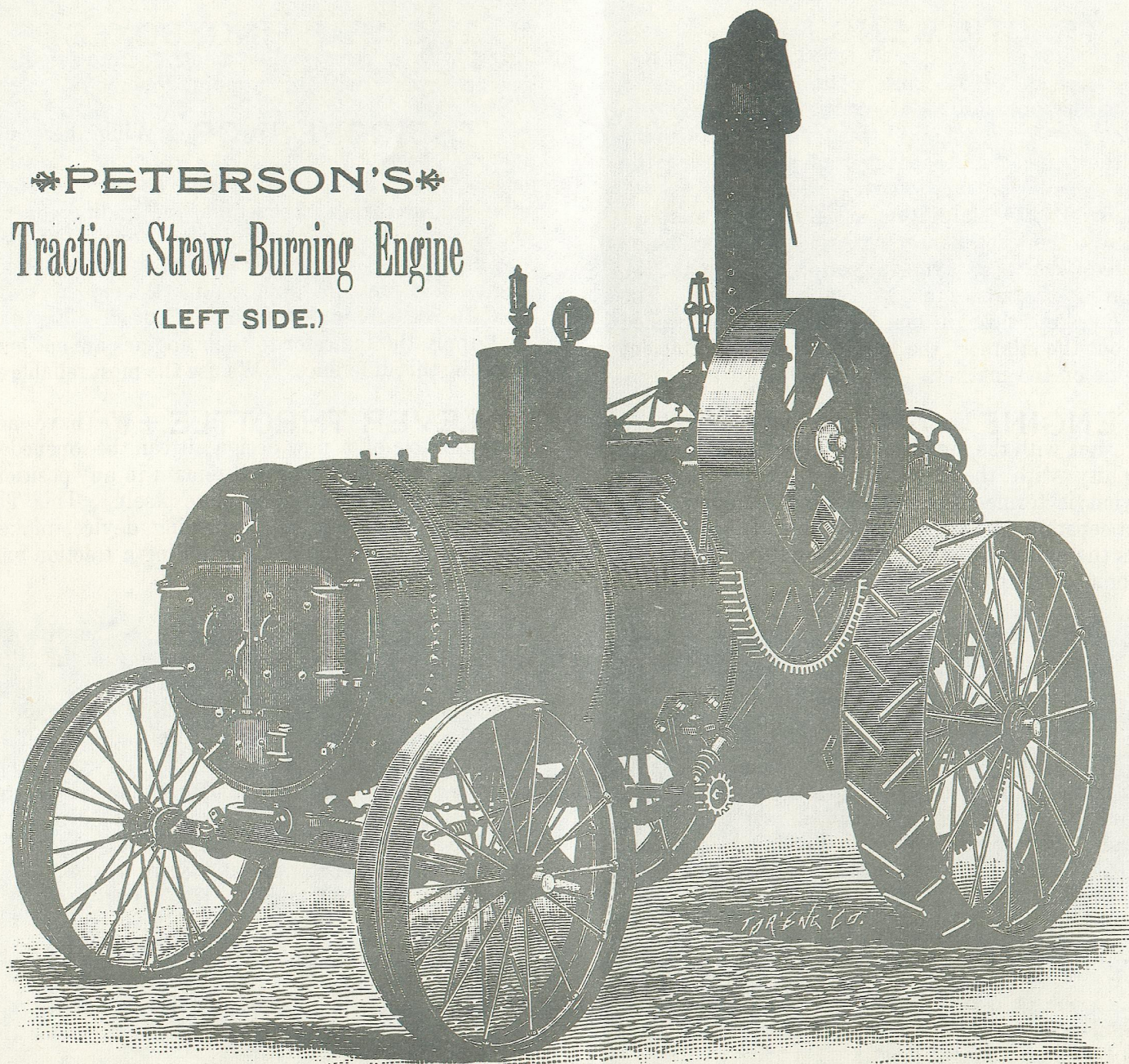
THE GOVERNOR.—While there are several fairly good governors made that will control the speed of an engine within a reasonable limit, we are prepared to say, after repeated trials of several of the leading governors, that there is a very noticeable difference (outside of their ability to control speed) in their capacity to supply steam to the engine at a pressure approaching the boiler pressure, and hold the pressure up to the point of cut off. Engine builders that apply the indicator to their engines are not long in discovering this difference. We use the most reliable governor.

LEVER THROTTLE.—We have adopted a lever throttle of a new design; it can be opened or closed instantly with ease, and will remain in any position, having no tendency to fly open or close itself. This Throttle in connection with our gear-reversing device, makes a combination for operating and controlling a traction engine that has no equal.

STEERING WHEEL.—The arrangement of the engine on the boiler is advantageous, in allowing the Steering Wheel to be placed on the fly-wheel side of engine, which makes it convenient in setting the engine in line with the band wheel and separator pulley, and by means of our reversing motion he can instantly cause the engine to move in either direction, under any and all circumstances. This device is a practical steam break. In descending a hill, the speed of the engine can be instantly checked, or the engine may be stopped and started again, all of which can be done without touching the Throttle.

STEERING CHAIN ROLLER is of improved design, with a self-locking device that prevents the front road wheels touching the boiler. This Roller is of such correct proportion and shape that it facilitates the steering of the engine with ease.

✱PETERSON'S✱
Traction Straw-Burning Engine
(LEFT SIDE.)



OIL CUPS.—Self-feeding Oil Cups are provided everywhere on the engine, to give sufficient lubrication to all working parts. A Sight Drop Feed Lubricator is also provided, by which the slide valve and cylinder are lubricated. This lubricator stops feeding when engine stops. All parts of our engines that are necessary to be made of steel are so made.

THE MANNER OF RELIEVING THE CYLINDER OF WATER.—One of the most objectionable features of a traction engine, while running on the road, is the noise made by the cylinder cocks while open. There are but few horses that are proof against this noise. This objection has been entirely overcome in our engine. Instead of having the ordinary cylinder cocks, both ends of the cylinder are connected by pipes to one three-way cock of special pattern, and discharging into the exhaust pipe. This cock is opened from the platform.

DRY PIPE.—The manner of supplying steam to our engine by a dry pipe is a feature peculiar to this engine. The steam is taken through a dry pipe leading from near the top of the inside of the dome, and through the boiler to the smoke-box, and exposing the pipe to the heated gases that escape through the smoke-stack, thus supplying the cylinder with dry steam, and enabling us to realize more power with a given boiler pressure than when steam is taken from the outside of the dome, as in other engines.

TRACTION GEAR.—We call special attention to the traction part of our engine, and the gearing in particular, each wheel being designated for its own especial duty. The first and most important point in the gearing of a traction engine is the arrangement for taking the power from the engine shaft, and engaging and disengaging the gear, leading to the driving wheels. We have made a great improvement in this particular; by using a friction clutch in the band wheel we are enabled to throw the traction gear in and out of motion by means of a single motion of the friction lever from the platform. By means of the friction clutch we are enabled to start heavy loads gradually, and so avoid sudden jar to the engine.

THE MAIN AXLE AND COUNTER SHAFT extend across the rear end of the boiler, the latter carrying the compensating gears, which are of large proportion, very sensitive, effective in making turns, and allow either driving wheel to run ahead of the other freely. When desired, both driving wheels can be locked together by a very simple device (attached to one of the arms in compensating gear), thus utilizing both wheels when passing over slippery ground.

DRIVE WHEELS.—We are satisfied that we make the best wheel for all conditions of roads. These Wheels are extra wide and of large diameter, with diagonal cleats across the face, and auxiliary spuds are also provided, which can be put on when needed, between the cleats when traveling over very soft and muddy ground, where the ordinary cleats would not hold sufficiently. These wheels have a cast iron hub with a long bearing for the axle, and wrought iron spokes and cast iron rim. We also provide suitable facilities for oiling these wheels in any position.

The manner of attaching the large gear directly to the rim of the drive wheel, obviates the use of wrought iron braces, making the gear and wheel practically one.

By excellent mechanical arrangement, the weight of the engine and gearing is concentrated over the driving axle, thus increasing the tractive or pulling power, and in combination with the location of the axle, prevents the front wheels from lifting off the ground when ascending grades, a fault common with many tractions.

FRONT WHEELS.—The Front Wheels are made in the same manner as the Drive Wheels. They are of large diameter and wide face, with a narrow rim cast around the centre of the wheel to prevent sliding. Attached to the steering chain we have heavy steel springs, with a tension of 4,000 lbs. These are for the purpose of relieving the steering chain of shocks. This is a matter that should not be overlooked in purchasing a Traction Engine. There is also attached to the draw-bar of this engine a spring of several thousand pounds tension, thus relieving the engine and load from shocks.

HORSE-POWER.

It is to be regretted that more uniformity does not exist among engine builders in rating engines by horse-power. The rating by different builders gives no idea of the size. All use the same rule, but under such different conditions as to leave the result in doubt. One builder will calculate on an average boiler-pressure of 50 lbs. and a piston speed of 200 feet per minute; another will assume 75 lbs. boiler-pressure and 300 feet piston speed per minute. These produce widely different results. We hope the following will enable our customers to calculate for themselves, and will make them independent of the confusing statements of builders: A foot-pound is one pound lifted one foot high per minute, or its equivalent. Such, for instance, as half a pound lifted two feet, or twelve pounds lifted one inch. A horse-power is 33,000 foot pounds, or 33,000 pounds lifted one foot high in one minute, or 33,000 pounds pressure forcing a piston through one foot, or any force acting through such a number of feet that when the pounds and feet are multiplied together the product will be 33,000.

To determine the horse-power of an engine, multiply the area of the piston in inches by the average pressure per square inch on the piston, and this result by the number of feet travelled by the piston per minute; divide this product by 33,000. The result will be the indicated horse-power. The average pressure can only be determined by applying the indicator.

In applying the above rule to a well-constructed engine of our class, it is safe to assume an average pressure of one-half the boiler pressure.

To find the area of the piston, multiply the diameter of the piston by itself, and this result by the decimal .7854. The result will be the area of the piston.

Example.—Diameter of cylinder, seven inches; average pressure, 51 lbs.; speed of piston in feet per minute, 350:—

$$\text{Thus: } \frac{7 \times 7 \times .7854 \times 350}{33,000} = 20 \text{ horse-power.}$$

DIMENSIONS

OF

PETERSON'S STRAW-BURNER TRACTION ENGINE.

NAME. PETERSON'S STRAW-BURNER ENGINE.	Cylinder. Inches.	Stroke. Inches.	Boiler. Inches.	Tubes. Inches.	Furnace. Inches.	Flue. Inches.	Pulley. Inches.	Revolutions Per Minute.	Traction Wheel, Width and Diameter. Inches.
Traction Engine Nominal, 16 H. P..... {	8	10	40	3 × 90	24 × 54	20 × 36	9½ × 40	225	14 × 64
Traction Engine Nominal, 14 H. P..... {	7½	10	38	2½ × 84	23 × 48	19 × 36	9½ × 40	225	12 × 64

APPRECIATING THE FACT THAT A PERFECT STRAW- BURNING BOILER

would meet a want long felt, especially where ordinary fuel is expensive, and where straw is of little or no value, we determined, if possible, to attain this desired object, and after many years devoted to experiments, all of which proved more or less successful, but none meeting with our entire approval until the present Straw-Burner was produced, which has since enabled us to offer to the public what we can without hesitation pronounce the best in the field.

In the front end of the furnace is placed a spout or device through which the straw is introduced in lieu of the ordinary furnace door. The boiler is handsomely jacketed, in order to prevent loss of heat, with a casing of wood covered with sheet iron securely held in place by bands, and every outfit is furnished with an improved spark arrester.

BOILER MATERIAL.

Our Boilers are made of best boiler steel, and on each plate is stamped a tensile strength of 61,000 pounds. All our boilers are made from boiler plate steel, imported and furnished specially to our order.

STRAW-BURNER BOILER.

Our special Straw-Burning Boiler is of the kind known as the Tubular Furnace Return Tube Boiler. The boiler shell, the furnace, and direct flue are all of tubular form, which is admitted by practical engineers to be the safest and most durable construction in steam boilers. The furnace and direct flue are connected with a *double flange head* which insures much greater strength and durability than can be obtained in the ordinary straight flue furnace. This boiler has water circulation around the bottom, and is very convenient for cleaning, having two brass plugs at either side and each end, and hand-hole in the bottom, all of which, plugs and hand-hole plate, can be removed for convenience of cleaning out.

BOILER TESTING.

Each boiler after being completed is filled with water, which is continued to be forced into boiler with a test-pump until the indicated pressure is shown to be up to 180 lbs. hydraulic pressure, assuming then that our boiler so tested is absolutely safe at a working steam-pressure of 125 lbs.

BOILER DOME.

We furnish steam domes on all of our boilers. On our Straw-Burner Traction Engine boilers the domes are necessarily of large capacity, and are central on the boiler, where the water and steam is least disturbed by the movement of the engine over rough roads. The central-placed steam dome is a very essential part of a traction engine; it not only supplies dry steam to the engine, but tends to prevent priming.

BOILER FRONT.

The front end of our Straw-Burner Boiler.—The boiler shell projects past the flue sheets. This projection is protected on each side and top by cast iron liner plates; the front is of cast iron, in which there is necessarily large opening for cleaning out the straw cinder that accumulates and must be cleaned out regularly through the opening in front head. The opening in front head is closed by two iron doors which are held firmly in place by a cross-bar of special make, and which is made so as to fasten or open either one or both doors.

BOILER FEEDER.

For supplying our Straw-Burner Traction Engine with feed water, we furnish the Penberthy Injector, a most reliable boiler feeder. As a proof of its adaptation as a boiler feeder, we may state that many locomotive engine builders and railway companies are using injectors exclusively for feeding boilers.

STRAW-BURNING.

Our Straw-Burner Boiler is specially constructed so to burn straw successfully as fuel, and will also burn wood or coal. By proper arrangement, the straw fuel is fed regularly into the furnace. The air (draft) is conveyed through outer end of the furnace flue where the fuel freely ignites and produces complete combustion. The flame and heat so produced in the furnace is conveyed through the direct flue, and returning into small tubes on either side of the boiler and out into the smoke-box and stack.

BOILER STACK AND BLOWER

The Smoke-Stack is attached firmly to a cast iron base, bolted to the top of smoke-box. It is connected by a hinged joint, by which it can be lowered or removed when necessary. The stack is also provided with an Improved Spark Arrester, thereby insuring safety from sparks. A Steam Blower is attached to the boiler and leading in'o the stack, and by a draft thus produced steam may be raised rapidly without running the engine.

GUARANTEES AND TESTIMONIALS.

Special guarantees, as well as special testimonials, are misleading, and are of little or no value to the purchaser. *Our Plain Guarantee.—We state fairly that our engine will furnish ample power to drive the separator.* Also observing that close competition necessarily compels us to furnish both *good material* and *good work* in the construction of our engines,—in fact we could not possibly do otherwise and compete. We aim to furnish first-class goods.

Directions for Using Our Straw-Burner.

Before starting the fire see that the engine stands level ; see that the water shows in the lower part of the gauge glass. Start the fire with straw ; introduce it slowly ; keep up a steady, bright blaze, and be sure and keep the grates clean, allowing time enough for the straw to consume on the grates, always having a bright light showing in the ash pit. Straw crowded in too fast will clog the furnace and tubes, but if fed properly it will give out a high degree of heat. Nearly all the ashes and waste will pass off, and the furnace and tubes will remain comparatively clean. Any soot that may accumulate in the tubes should be swept out twice a day (noon and night) from the door of the fire end. Sweep the furnace with an old broom once a day. Always be sure and close the door after each introduction of straw, and never allow cold air to draw through the boiler when hot.

The boiler should be thoroughly cleaned once a week, and washed out from both ends by removing four brass plugs and one hand-hole plate in the bottom. There are bushings that screw into the plug holes to prevent injury to the thread when using the scraper.

The Scraper is made by using a bent end screwed on to the end of the flue cleaner rod.

A suitable wrench is furnished for taking out the plugs.

Never allow the water to get out of sight in the water glass. If by accident, or through want of attention water should become lower than the gauge, extinguish or draw the fire at once ; failing to do this there is danger of burning the boiler.

Use soft water whenever obtainable. If using hard or impure water, a little should be blown off through the blow-off cock every morning shortly after steam begins to raise, and the boiler should be emptied once a week.

Keep the gauge-cocks clear by trying them occasionally. Do not depend entirely on the glass water gauge.

Particular care should be taken not to fill up the boiler immediately after blowing off—before it has had time to cool—as cold water on hot boiler plates and tubes causes severe and sudden contraction, which is very injurious to the boiler.

Never blow the boiler off with over 15 pounds of steam on. Always see that the valve rod, piston rod, and governor spindle, and all globe valve spindles are carefully and properly packed.

See that the Governor is kept well oiled, and the governor belt well laced and tight enough not to slip; run the Governor with a crossed belt. The speed of the engine may be lessened or increased by turning the adjusting thumb nut on the Governor.

The proper speed of the engine is 225 revs. Always endeavor to have the pulley on your separator shaft of such a size that the engine may be run at this speed.



To Prevent Freezing and Bursting of Pipes.

Be careful to have all the drain cocks open when through with work in cold weather, and have the boiler empty if to stand any length of time. To drain cylinder, open three-way cock, open tap on under side of steam chest, and also open tap in exhaust pipe; shut globe valves on Injector and water column pipes close to the boiler, also open taps to drain these pipes.

It will be seen that we provide extra precaution against frost by having all pipes shut off close up to the boiler, and ample facilities for draining them.

HOW TO ORDER REPAIRS.

A great deal of trouble may be avoided when ordering repairs by the person ordering being particular to describe just what he requires. Always describe what you want as fully as possible; if pipes, give inside of hole size; if boiler tube, give outside diameter and length.

If you require castings or any part of the engine, mention the name of piece and to which part of the engine it is attached, and send the old piece, if possible, then you will be sure to get the right piece, as all our engines are made in quantities and duplicated, and each piece will fit any engine.

Send your full address, post office and nearest station, and whether you want them sent by freight or express.

In ordering by freight, to insure immediate attention, the cash should be sent with the order. When goods are sent by express they will be sent C. O. D. (cash on delivery).

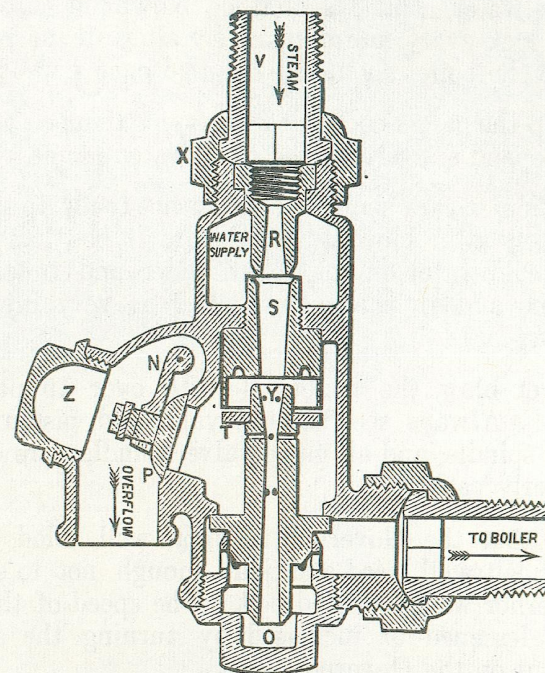
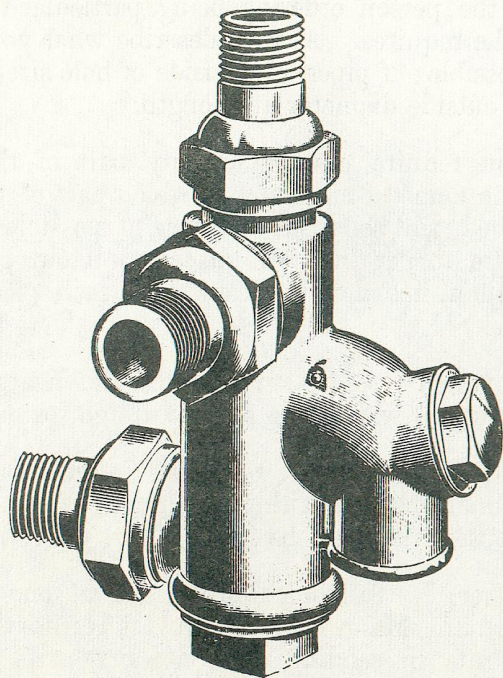
We keep a full stock of repairs at our Winnipeg agency, and any Manitoba or Northwest Territory customers may feel safe in sending there for any parts they may require.

REFERRING TO THE BOILER FEEDER,

WE FURNISH THE

PENBERTHY INJECTOR.

We can say that after several years of experimenting we find the Penberthy Injector one of the best boiler feeders made. For simplicity and accessibility of its parts it exceeds all that have come to our notice. This Injector is automatic, and is controlled entirely by the valve in supply pipe after the steam is turned on. By means of this valve the Injector is made to throw regular supply of water into boiler.



- | | |
|-------------------|--------------------|
| V.—Tail Pipe. | T.—Ring. |
| X.—Coupling Nut. | O.—Plug. |
| R.—Steam Jet. | N.—Overflow Hinge. |
| S.—Suction Jet. | P.—Overflow Valve. |
| Y.—Delivery Tube. | |

TO START.—Open full the globe valve in water supply first, and then globe valve in steam pipe. If water issues from overflow, throttle the valve "H" until discharge stops.

TO STOP.—Close the steam valve. The water valve need not be closed.

POINTS AND GENERAL INFORMATION.

If Injector starts, then breaks, you need more or less water, or there is a leak in suction hose, or leakage at valve stem, or sediment on the end of strainer.

If Injector gets water, but does not force to boiler, look out for too much or too little water, dirt in delivery tube check valve that don't raise at all, or not enough, leak in supply pipe admitting air, or an obstruction somewhere between Injector and boiler.

TO FIND LEAK.—Place a small piece of wood in the hollow part of the overflow cap Z, so that when screwed into place it will hold overflow valve firmly on seat; plug up lower end of water supply pipe and turn on steam, which will locate the leak in connections.

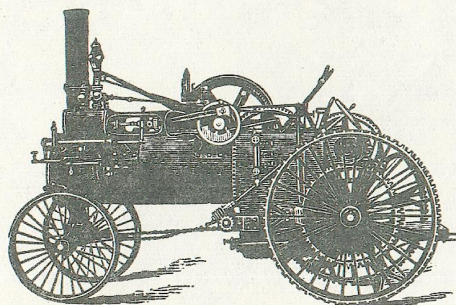
TO CLEAN.—To clean Injector unscrew plug O and the removable jet Y will follow the plug out in which it rests. Turn on steam (not less than 40 lbs.) and all dirt will be blown out. Examine all passages and see that no dirt or scale has lodged in them. Replace jet by setting it in the plug (which acts as a guide) and screw into place tightly. Be careful not to bruise any jets, and use no wrenches on body.

Where water used is limy or contains a sediment, time, money and trouble will be saved by taking out the jet Y and putting it to soak every two to four weeks, as case requires, in a solution to one part muriatic acid to ten or twelve parts water. Some sediments will dissolve in thirty minutes; others take twelve to twenty-four hours. An examination of the jets will show whether they are clean. As often as four to six weeks put the whole Injector to soak. Two-thirds of all Injectors returned as not working properly are on account of the passageways becoming contracted with lime sediment. Order an extra jet Y, and do not wait until you break down.

REPAIRS.

Special Notice.—In ordering parts, don't fail to send the shop number, which will be found on top of the overflow, or you will be delayed in receiving them. In referring to parts, call them by name as in diagram.

KING OF THE TRACTIONS.



This cut represents our Coal or Wood-Burner Traction Engine, or Road Locomotive.

This engine we manufacture in four sizes: 10, 12, 14 and 16 horse-power.

This Traction Engine, or Road Locomotive, has never been excelled, even when submitted to the most severe expert and practical tests that traction engines were ever submitted to. In brief, some of the advantages claimed are:—Simplicity of construction and ease of management, the throttle valve, pump, injector, reverse lever, steering arrangement, friction lever,—in fact, everything necessary for the perfect control of the engine being within easy reach of the engineer.

Adaptability to all kinds of roads, regardless of the grades or surface, when solid; drawing heavy loads at great speed; economy in fuel and water; all its parts being perfectly interchangeable; neatness of appearance and finish; large driving wheels; gear reverse motion; friction attachment in band wheel.

POINTS TO BE CONSIDERED.

The points to be considered by purchasers of steam power are:—First, economy in the use of fuel; second, a steady motion under variation of load; third, design combined with good material and first-class workmanship.

The main driving axle extends across the front of the fire-box, under the fire-door, and is securely held in position by two heavy corner brackets.

THE COUNTER-SHAFT,

With compensating gear and pinion, that gear into the driving wheels, is above the main driving axle, and is also bracketed to the front of the boiler. Thus placing the Counter-Shaft prevents damage to gearing in muddy or sandy roads—a fault common with traction engines having the Counter Shaft located under the boiler or near the ground.

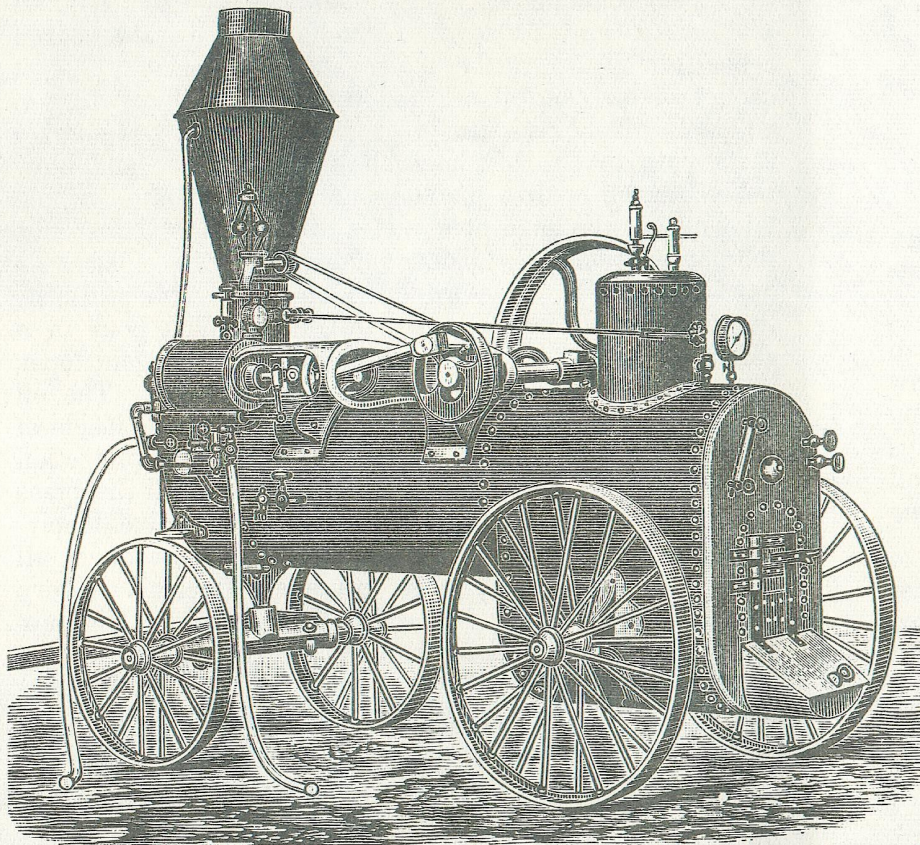
All sizes are furnished complete, with pump, heater, injector, spark arrester, governor, whistle, steam gauge, gauge cocks, suction hose, tool box, wrenches, oil can, mud lugs, oil cups, flue cleaner. Each machine is thoroughly tested before shipment.

MOST PERFECT TRACTION ENGINE.

Taking in all, appearance, genuineness of construction, perfection of proportion, convenience, economy, strength and all the essential features of a first-class Traction Engine, we can refer to our machine with pride, and challenge an equal to its claim to be entitled

THE KING OF THE TRACTIONS.

PORTABLE ENGINES.



This cut represents our Improved Portable Engine which, for easy running, economy of fuel, and lightness, combined with durability, is unexcelled.

SPARK ARRESTER.

We furnish each Threshing Engine with the *McKenzie Patent Spark Arrester*, and when properly used WITH WATER in it insures perfect safety from sparks, and is considered ABSOLUTELY FIREPROOF.

THE WHEELS are all iron. The hind axle extends under the Fire-box, being curved to the exact form of the boiler, instead of merely abutting against the sides of the same, as is customary with most other manufacturers, thus relieving the boiler from any sudden jar and consequent liability to injury when travelling on rough roads.

THE FIRE-BOX is completely surrounded by water, both at the front and bottom of boiler, thereby preventing sparks from getting out, and adding increased steaming capacity to the boiler.

SOME OF THE ADVANTAGES.

The illustration on this page represents our Plain Portable Engine, as made in two sizes, ten and twelve horse power, which, for easy running, economy in fuel, and lightness combined with durability, is unequalled.

EASY ON WATER AND FUEL.

Our Engines are light on water and fuel. The valve of the engine is so designed as to give the best possible result by using steam expansively. A plain side valve with sufficient lap to cut off the admission of steam; enough later than half stroke to always insure the starting of the engine at any position of the crank. Steam expanded and so worked and reinforced by proper clearance and dry steam in the cylinder insures, without doubt, the very best results; and by our admirable plan of taking steam from the inside of STEAM DOME through a two-inch pipe inside of the BOILER and through smoke box, where, in passing through, the steam is SUPERHEATED and conducted by short connection into the steam-chest, and so arranged as to enable us to guarantee a saving of 25 per cent. over other threshing engines ordinarily constructed.



After Receiving a New Engine, What Should be Done First to Prepare it for Running Properly?

Remove the box containing the fittings and tools, see that all the grates are in their places, take out the tools that are packed in the smoke box end of the boiler. Then, with waste or rags well saturated with turpentine, kerosene or benzine, remove all the grease and oil that the manufacturer has put on to protect the bright work from injury. After this has been well done, clean every oil hole found upon the engine. If cinders and dirt are allowed to remain, the bearings will heat and cut.

Take the oil cups furnished with the engine, clean them carefully and fit each cup to its proper place, screw them in tightly with a wrench to prevent their working loose and falling off while on the road. Fill all the cups with good oil, lard oil for the bearings, and good black oil for the automatic oiler on cylinder. Examine the stuffing boxes and see that they are all packed and clean.

After you fill the boiler, a half inch of water in the glass gauge, start a moderate fire at first in the furnace or fire-box, and while steam is being raised take your wrench and oil can and examine your engine in all its parts. See that no screw or bolt is loose and none of the oil holes have been overlooked. If a traction engine, examine all your gearing, and see that all the gears and bearings have been thoroughly greased and oiled.

An engine should be started slowly, and with just sufficient momentum to carry the crank over the center, and then bring it gradually up to its regular speed, as, when started in haste, the water which results from the condensation of the steam when it comes in contact with the cold cylinder is liable to fracture the piston or cylinder, or spring the joints, and cause them to leak.

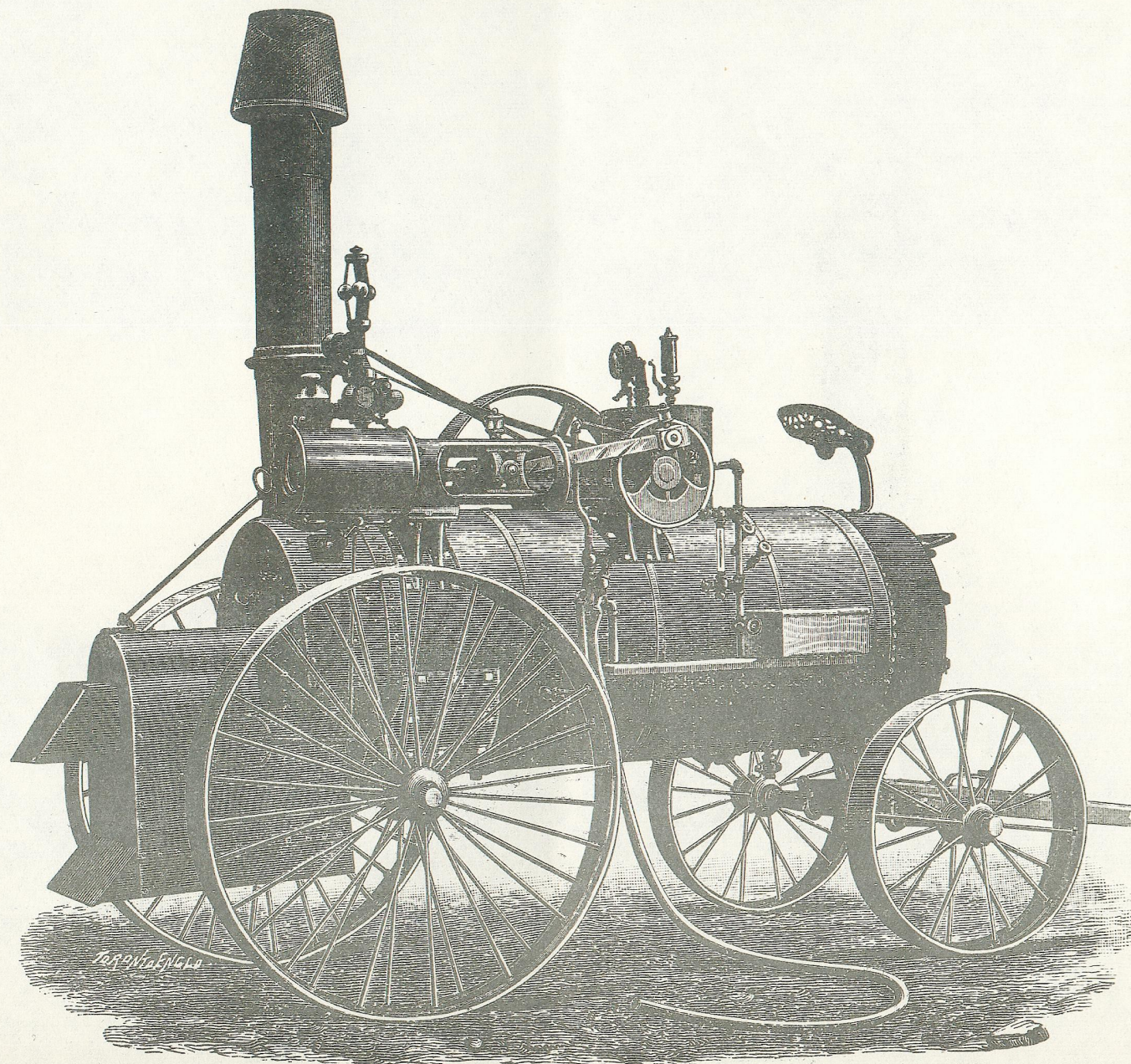
An engineer should leave the drip-cocks in the cylinder open whenever the engine is standing still; they should not be closed until after the engine has been started up and made several strokes or revolutions.

DIRECTIONS FOR STORING ENGINE.

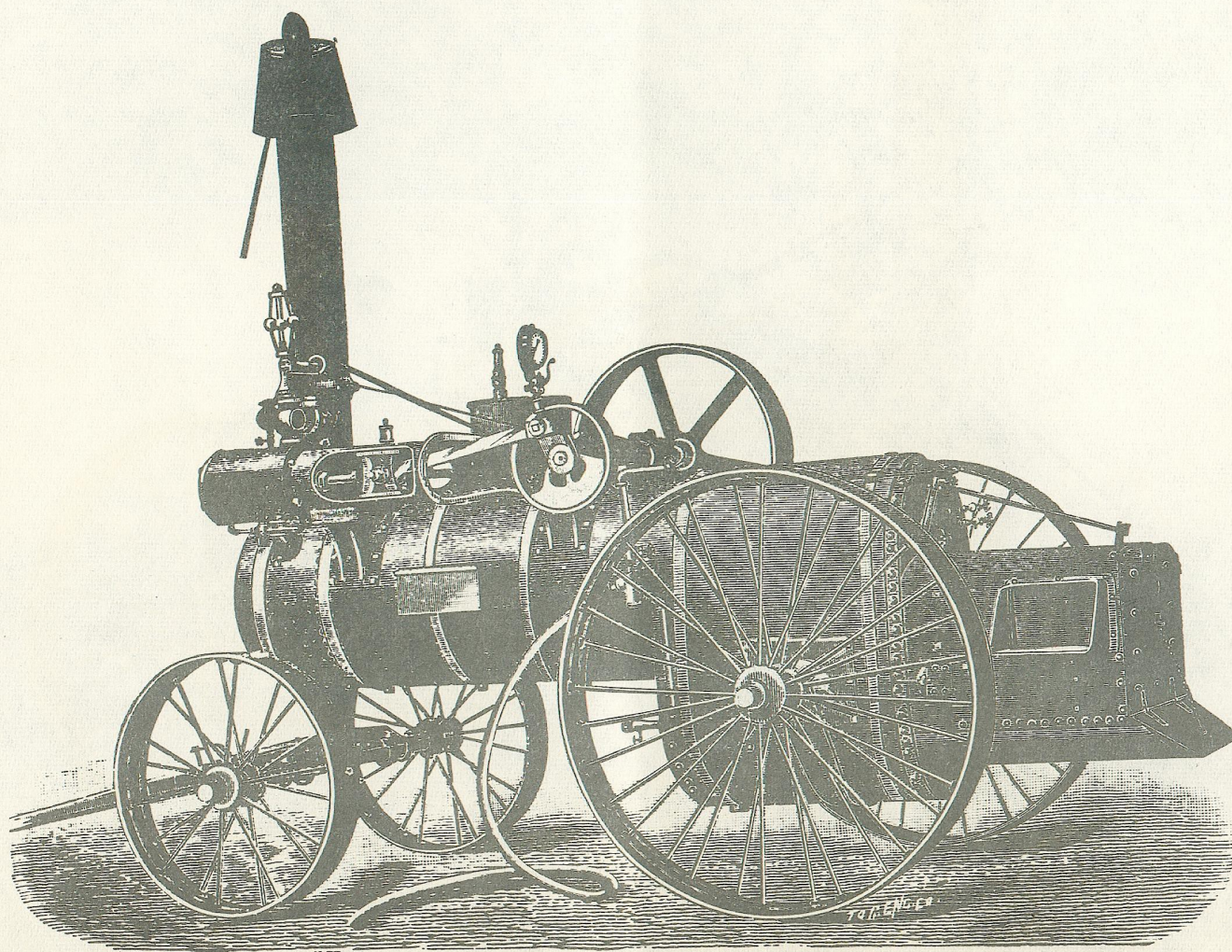
Proper attention in this respect will save your engine from injury by frost and corroding. While steam is on, clean your boiler and engine thoroughly outside, scrape off all oils, grease and scale, after which apply a good coat of asphaltum paint to the boiler and smoke-stack. If it cannot be had, lamp-black and linseed oil will answer. If no paint can be had, take rags, saturate them and go over them with that. Now open the blow-off valve and blow the water off with a low pressure of steam, after which take out all the hand-hole plates and wash the boiler out thoroughly, removing all mud and scale; then replace the hand-hole plates, close the blow-off valve and refill the boiler with water nearly full, after which pour in a gallon of black oil upon the water; now again open blow off valve and allow the water to run out. The oil will follow the water down and cover the whole inside of boiler with a coating of oil, making as good a protection against rust as can be found. Next remove all the brass fittings, such as lubricator, steam gauge, safety valve, inspirator, check valve, pump valves, etc., etc. Disconnect all pipes where water may lodge, to prevent freezing. Every pipe and valve allowed to freeze will surely burst. Unscrew all stuffing boxes and remove the packing. Unless this is done you will find another season they are badly rusted where the packing was allowed to remain. Take off all cylinder cocks, pet cocks, etc., from the heater and pump. All should be carefully packed and laid away. Clean the flues and fire-box, also the ash pan; do not neglect to paint the ash pan, both sides and bottom. Now, remove the back cylinder head, roll the engine forward and smear the inside of the cylinder with tallow, or oil (if no tallow can be had); place the head back again and smear all the bright work, such as piston rods, crank connecting rods, etc., not forgetting to put a piece of oil cloth, sacking, or even a board will answer, on top of smoke-stack to keep water and snow from entering.

If the above directions are followed you will find another season that your engine will be clean, free from rust and ready to serve you faithfully and well without any trouble or delay in starting, either in time or expense.

PETERSON'S PORTABLE.

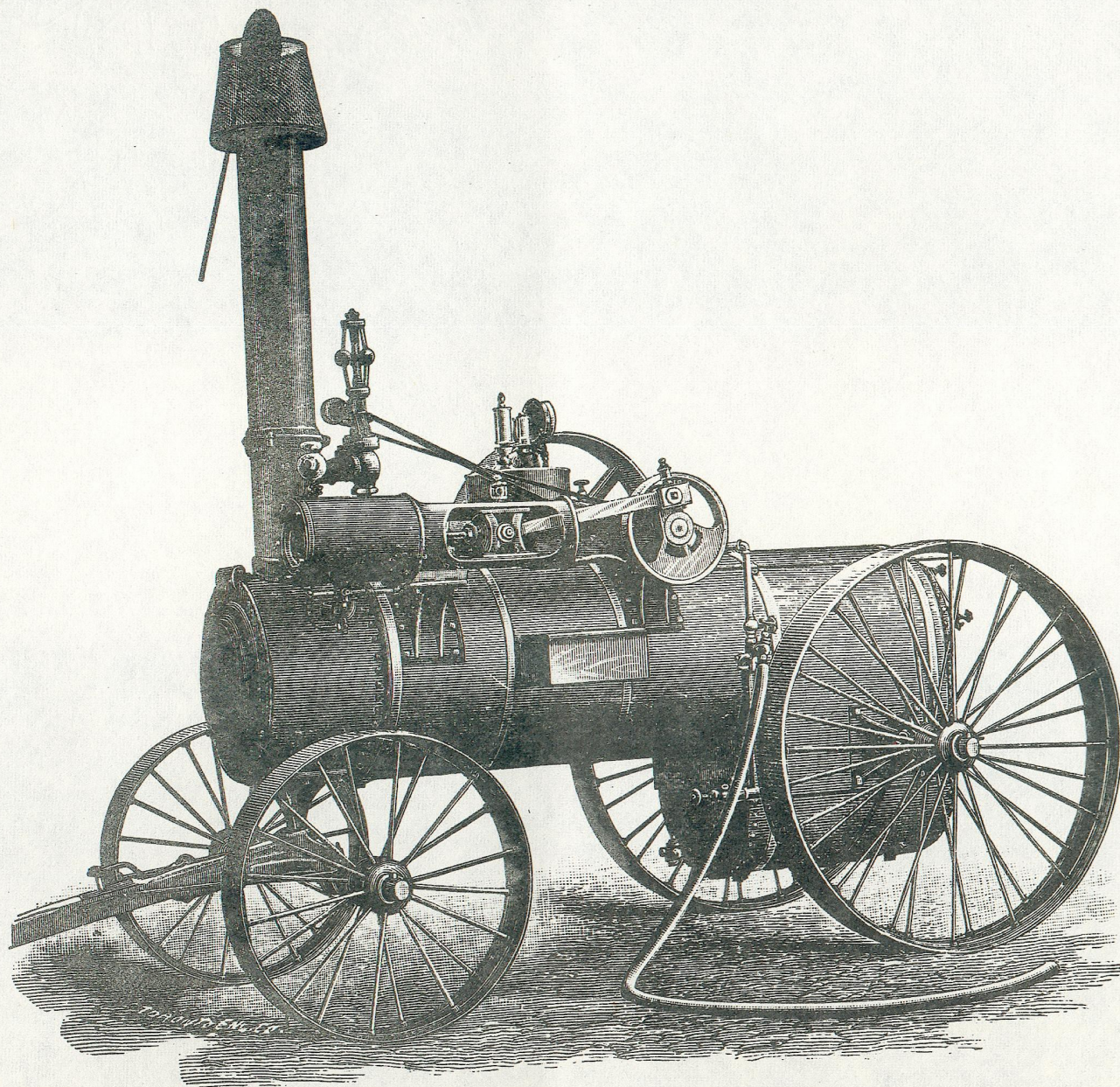


Return Flue Straw Burning Engine, 12, 14, 16 Horse Power.

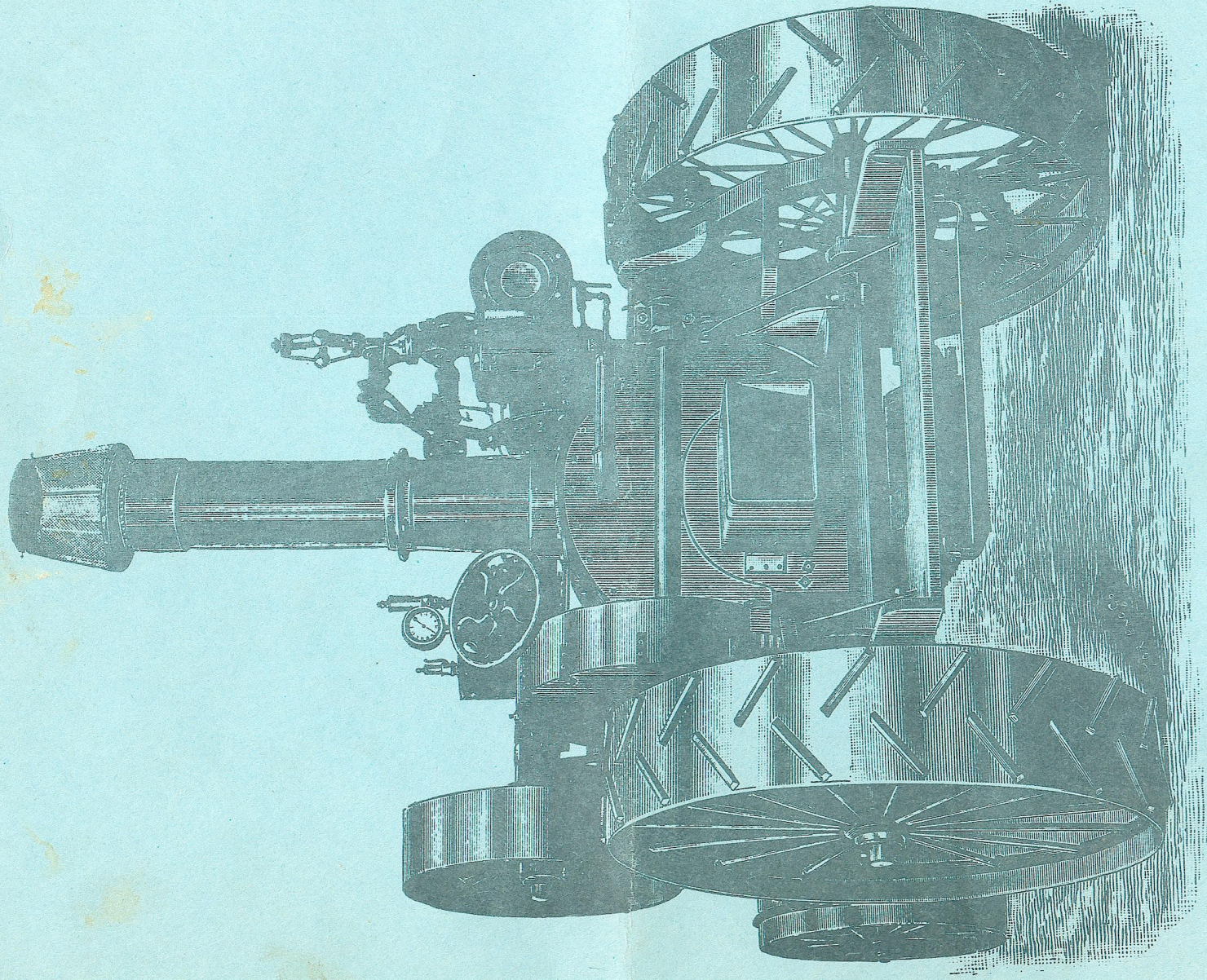
PETERSON'S PORTABLE.

Direct Flue Straw Burning Engine, 12, 14, 16 Horse Power.

PETERSON'S PORTABLE.



Wood or Coal Burning Engine, 12, 14, 16 Horse Power.



REAR VIEW.

PETERSON'S STRAW-BURNING TRACTION ENGINE.